TERMINAL LEARNING OBJECTIVE

ACTION

State the course objectives for the logic block of instruction.

CONDITION

Given a classroom environment and official OMEMS reference materials.

STANDARD

Understand the course objectives for the logic block of instruction.

CLASSIFICATION:	UNCLASSFIED
SAFETY CONSIDERATIONS:	ELECTRICAL SHOCK HAZARD
	ELECTOSTATIC DISCHARGE
ENVIRONMENTAL:	NONE
RISK ASSESMENT:	LOW

ENABLING LEARNING OBJECTIVE

ACTION

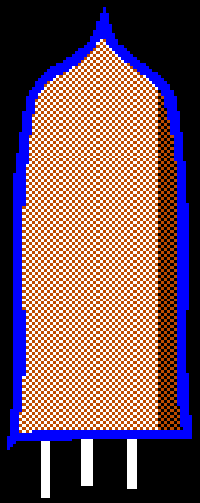
State the course objectives and student responsibilities for the logic block of instruction.

CONDITION

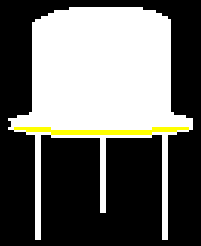
Given a classroom environment and official OMEMS reference materials.

STANDARD

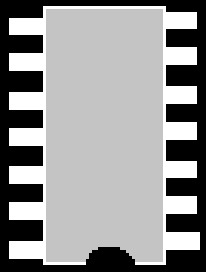
Understand the course objectives for the logic block of instruction.



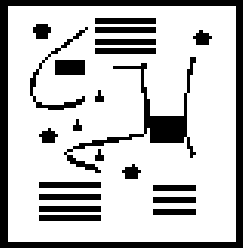
VACUUM TUBE
(FIRST GENERATION)



TRANSISTOR
(SECOND GENERATION)



INTEGRATED CIRCUITRY
(THIRD GENERATION)



MINIATURIZATION
(FOURTH GENERATION)

DIGITAL- ELECTRONICS OF COUNTING

4-100-03

EL01-S02

BINARY NUMBER SYSTEM

$N_{(2)}$

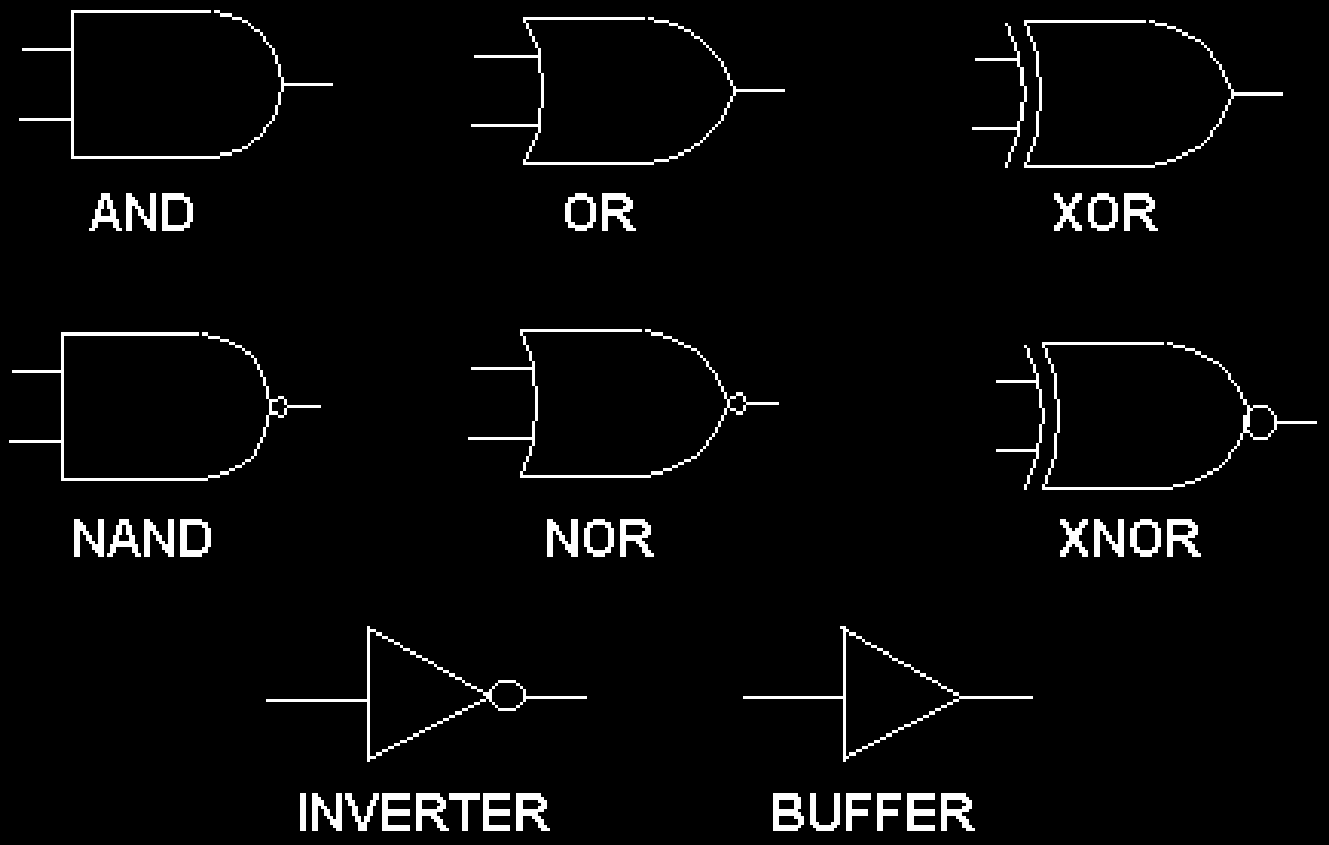
0 1

COUNTING

0, 1, 10, 11, 100, 101,
110, 111, 1000, ...

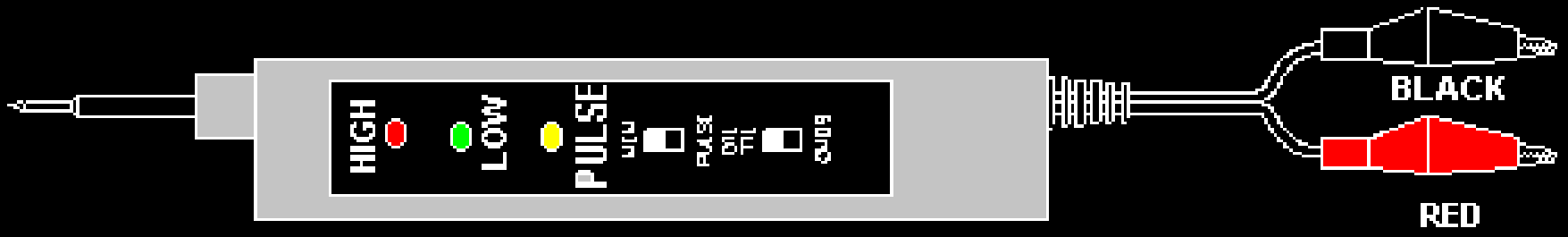
BREAKPOINTS ARE INDICATED IN RED

4-001-05



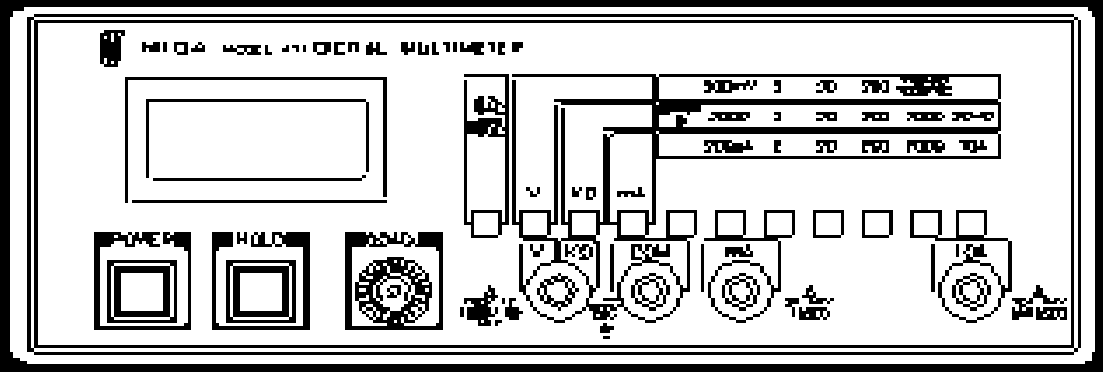
DIGITAL LOGIC GATES

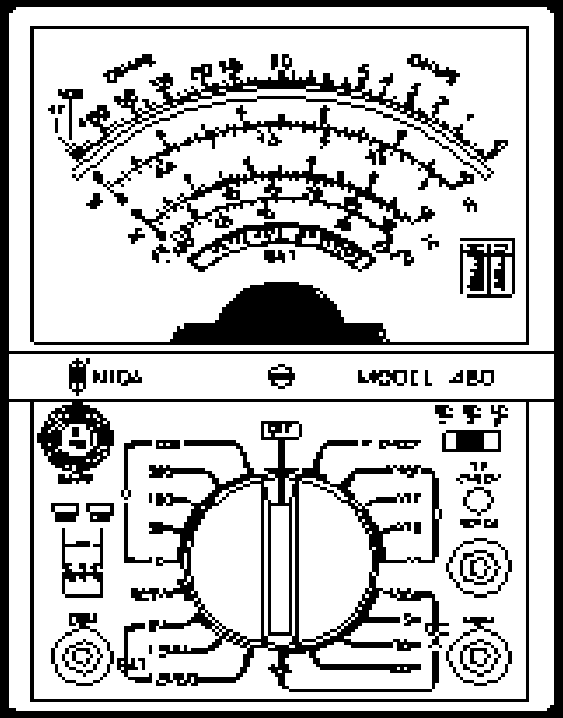
4-001-06



DIGITAL TEST EQUIPMENT
LOGIC PROBE

4L001_07

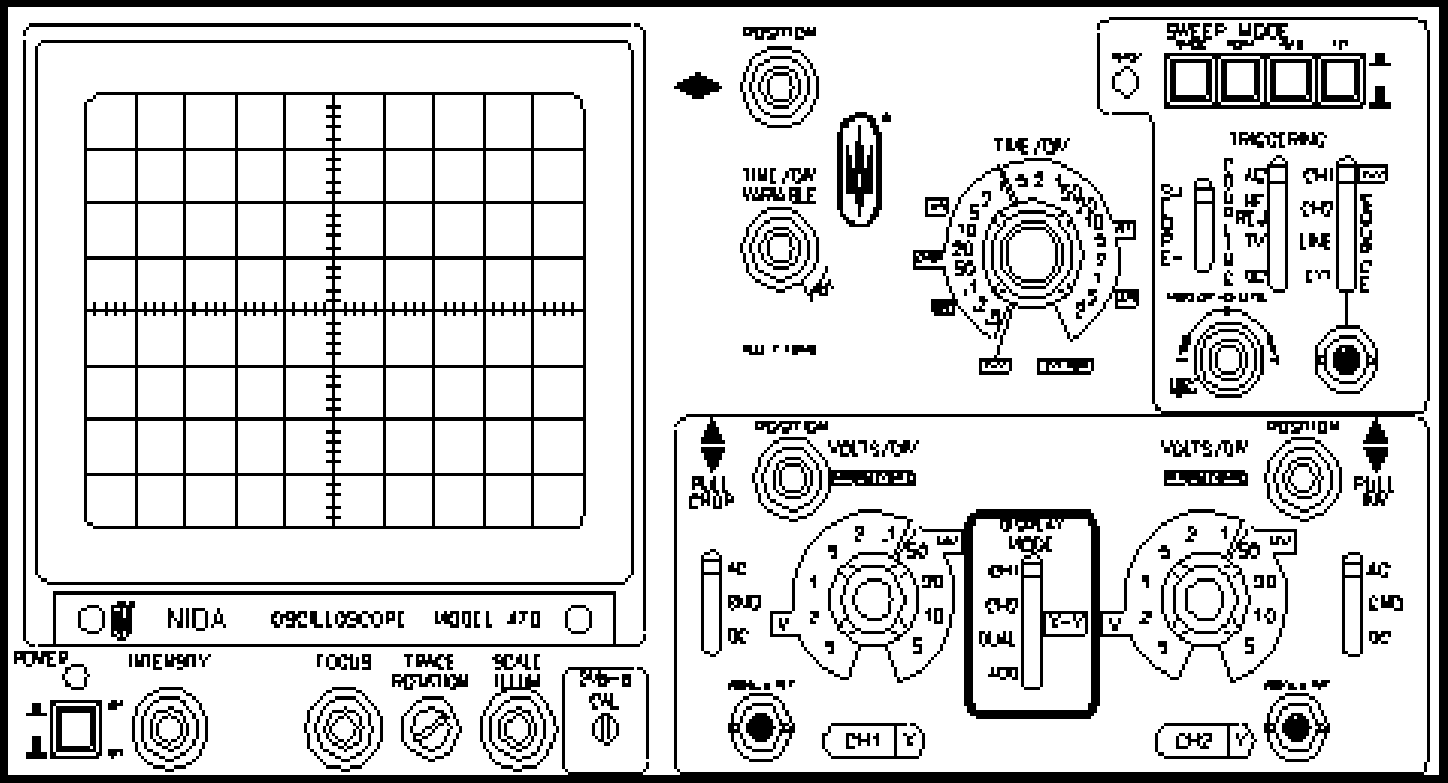




DIGITAL TEST EQUIPMENT
MULTIMETER

4-001-08

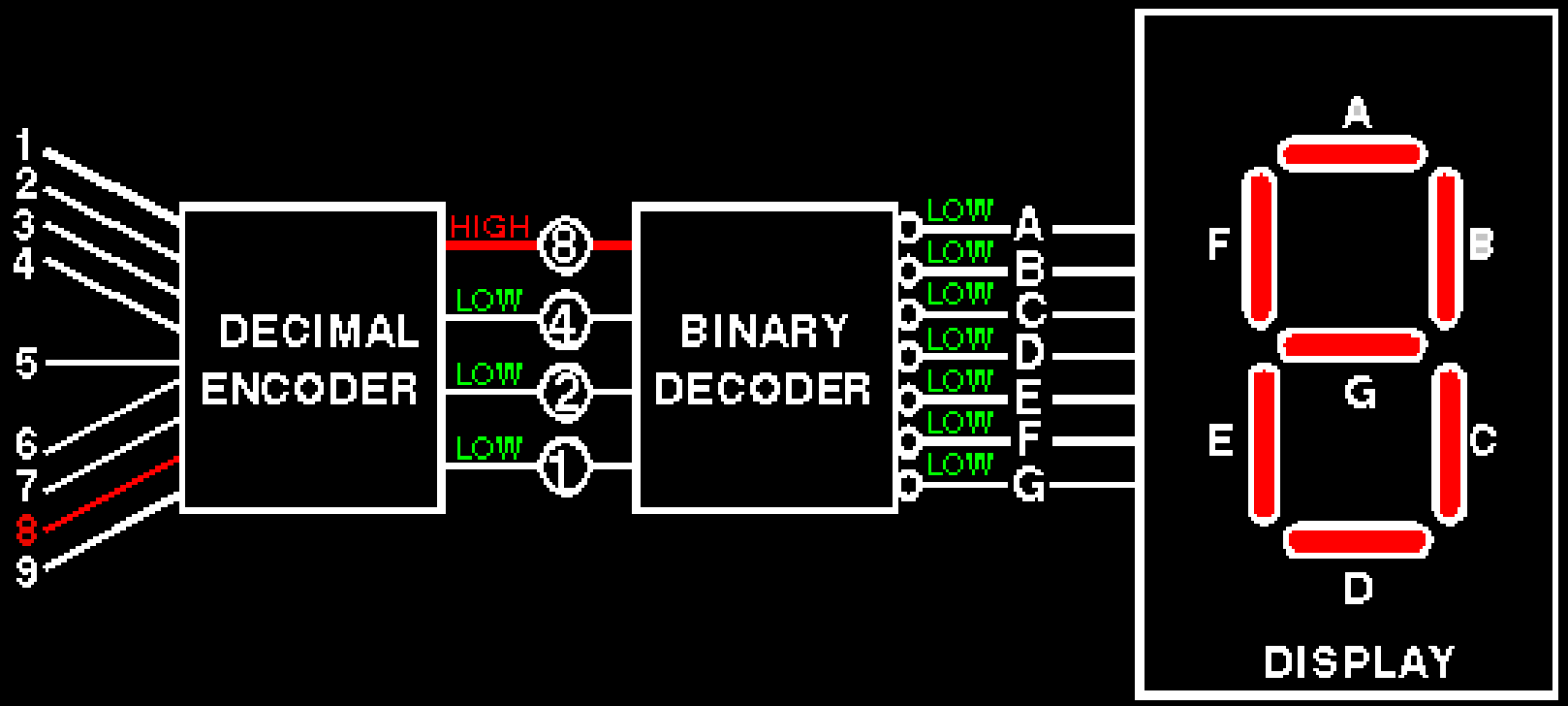
EL01-S06



DIGITAL TEST EQUIPMENT

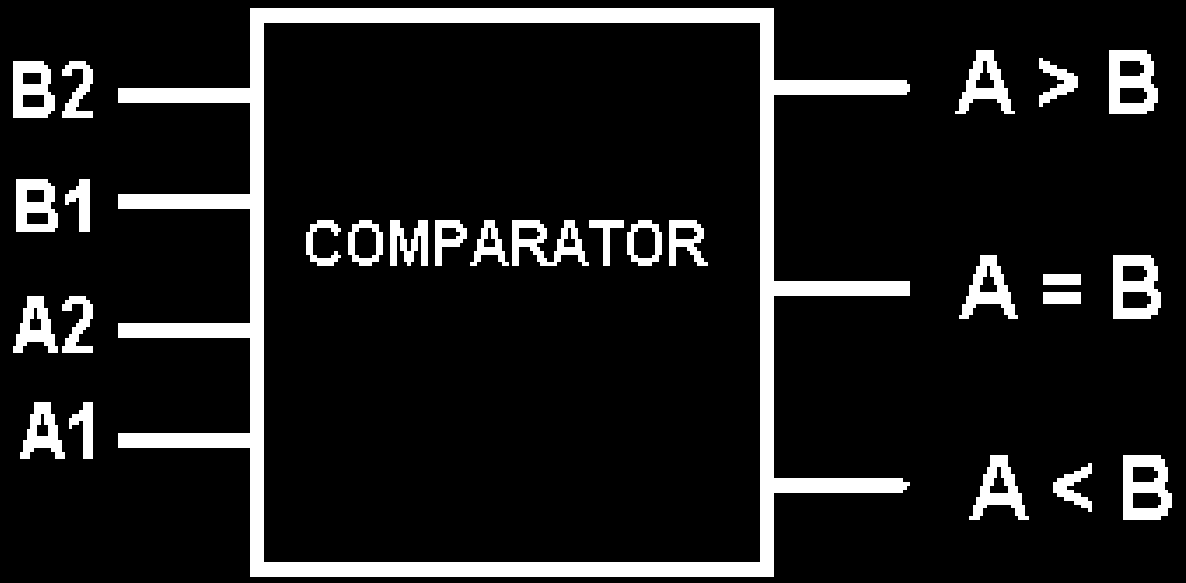
OSCILLOSCOPE

4-001-09

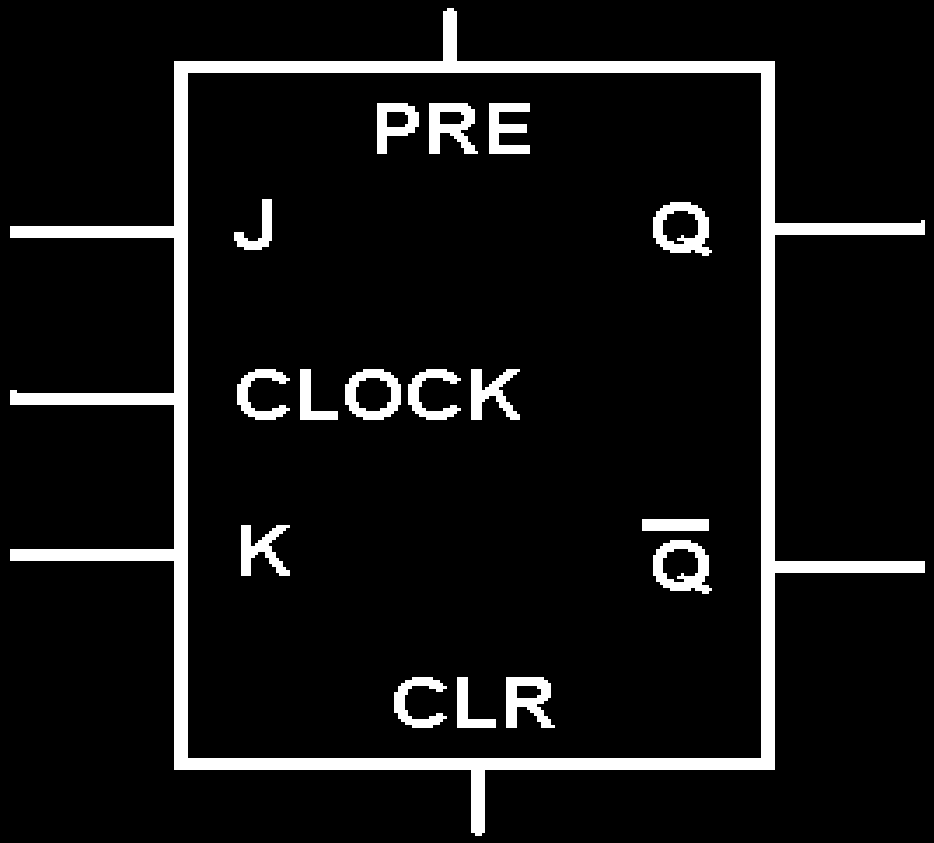


COMBINATION CIRCUITS
ENCODER AND DECODER

4-001-10

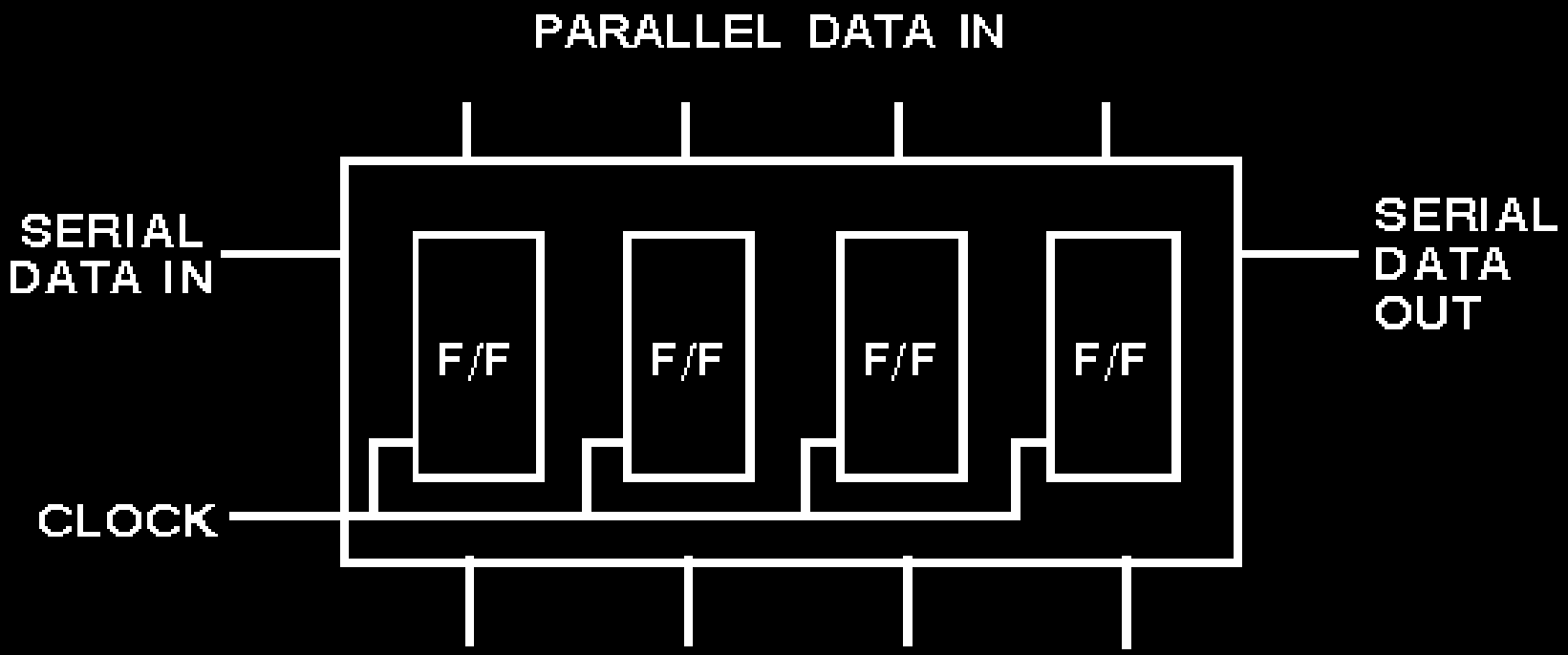


COMBINATION CIRCUIT



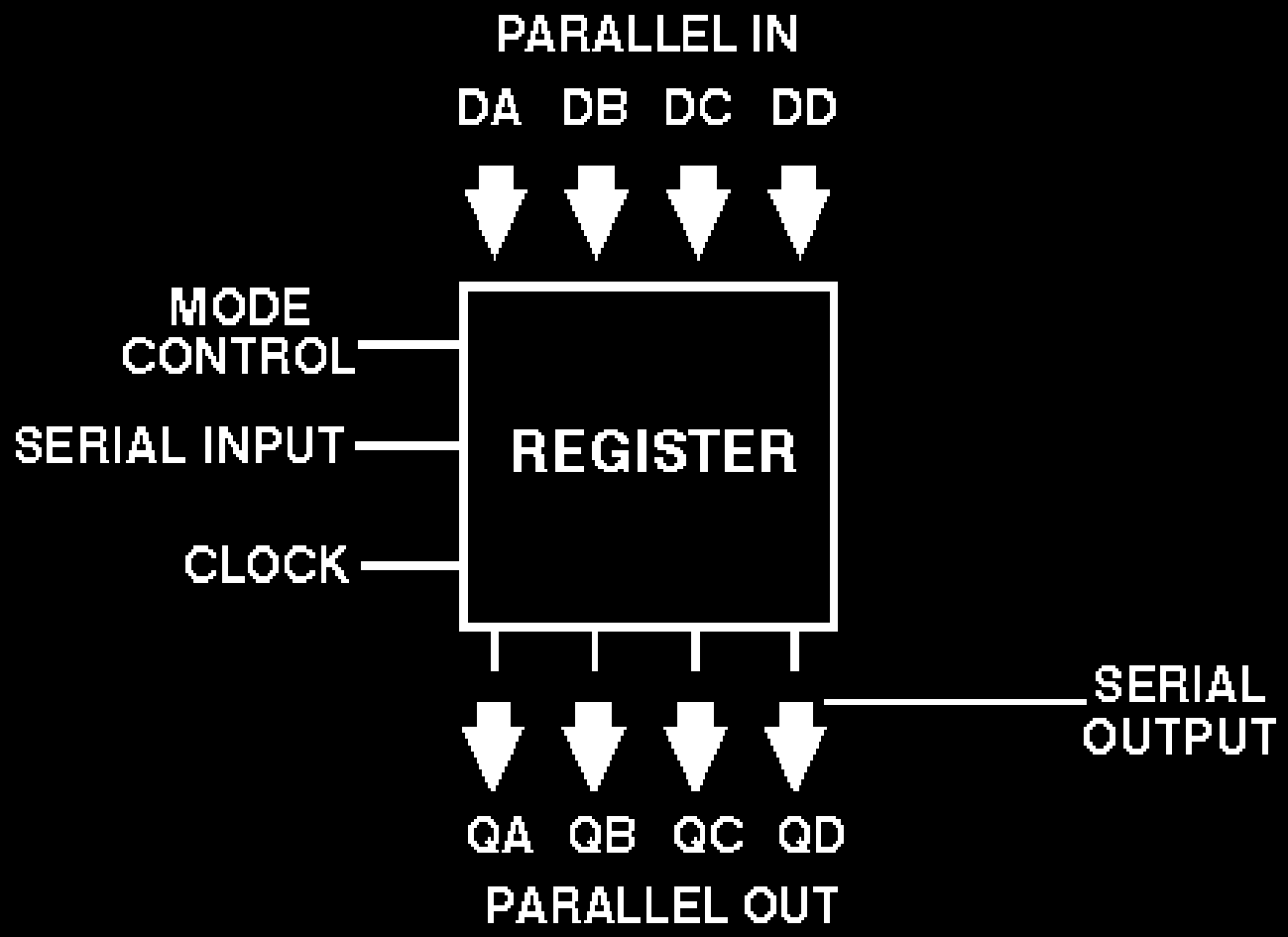
4-001-11

FLIP-FLOPS



STORAGE REGISTERS

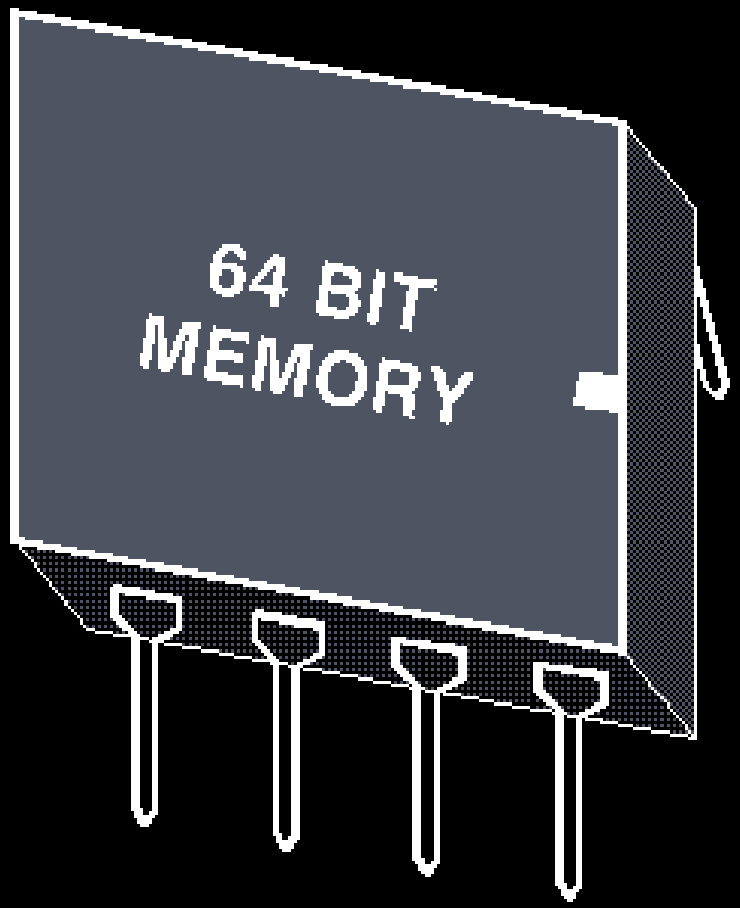
4-001-12



SHIFT REGISTERS

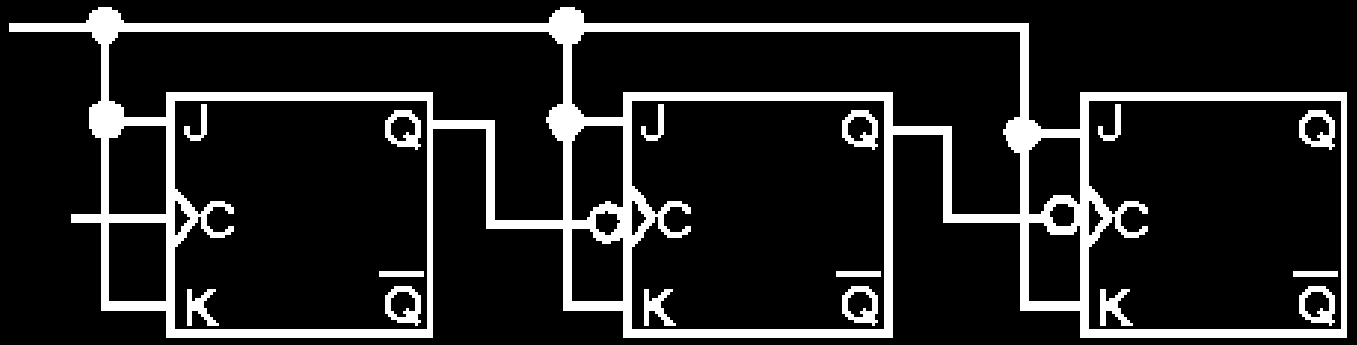
4-001-13

ROM

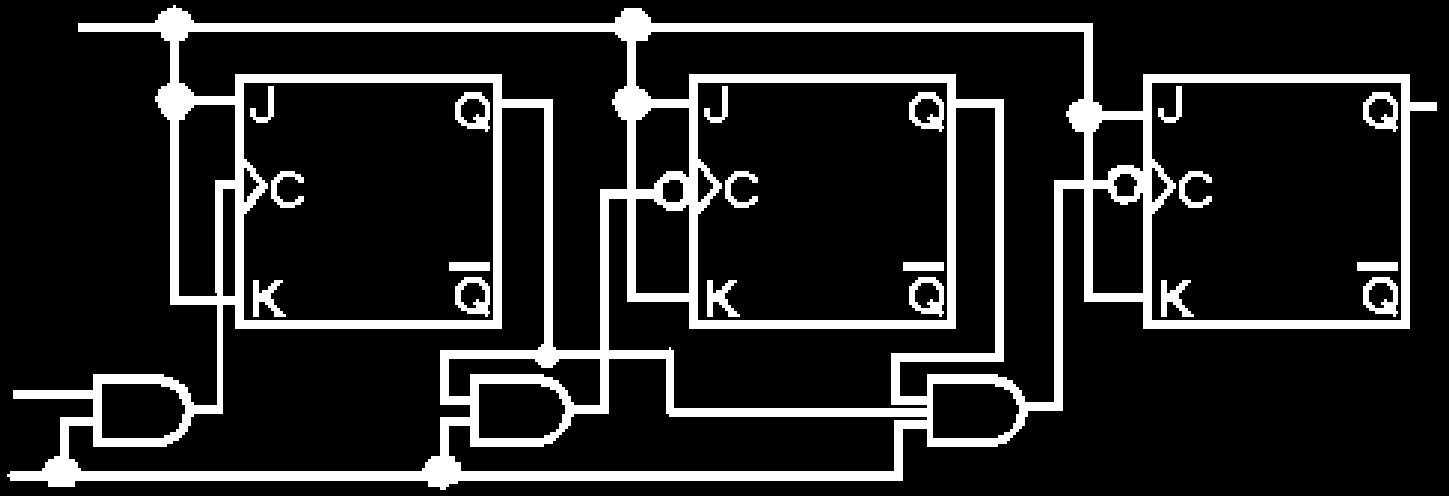


RAM

MEMORY CIRCUITS

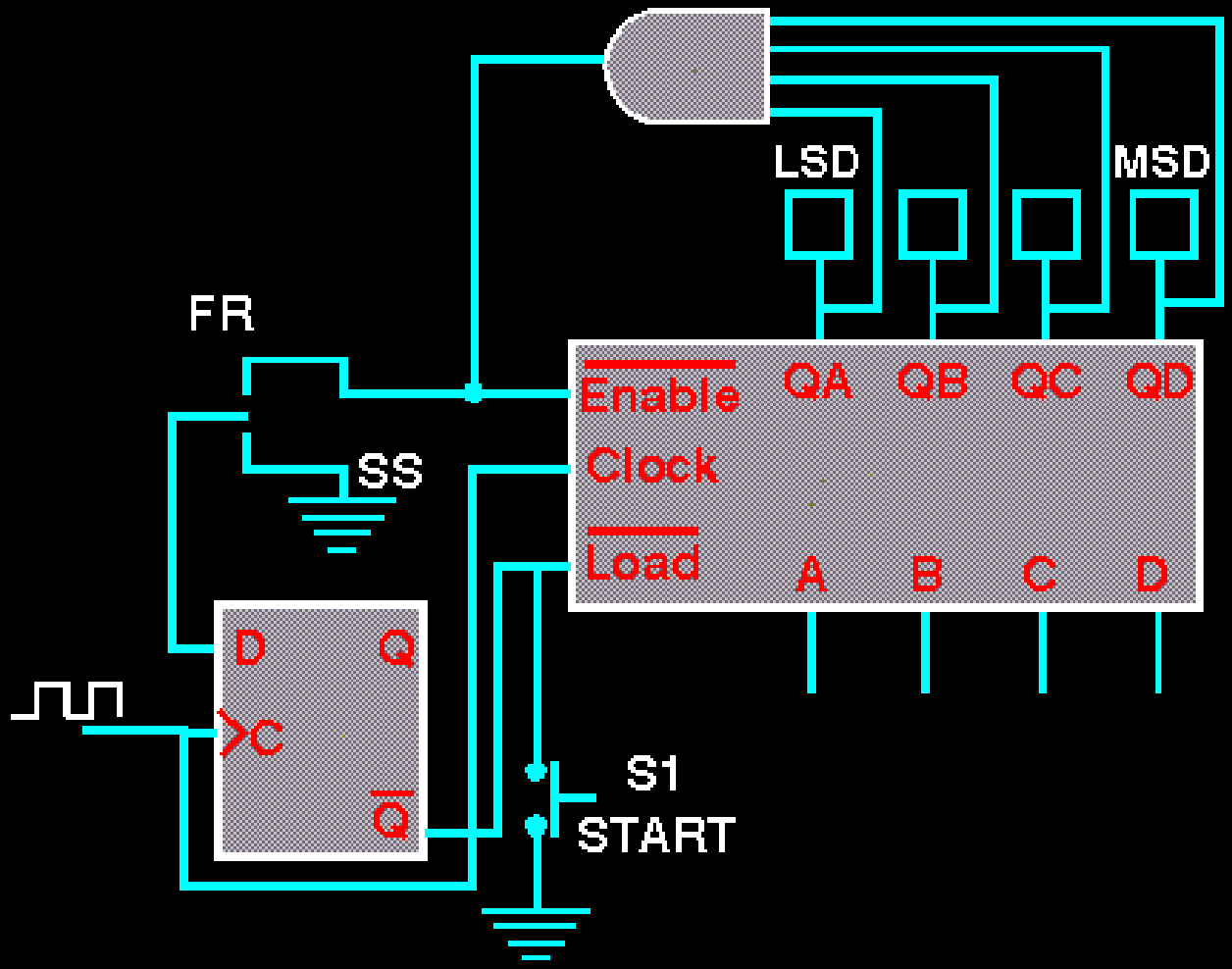


ASYNCHRONOUS



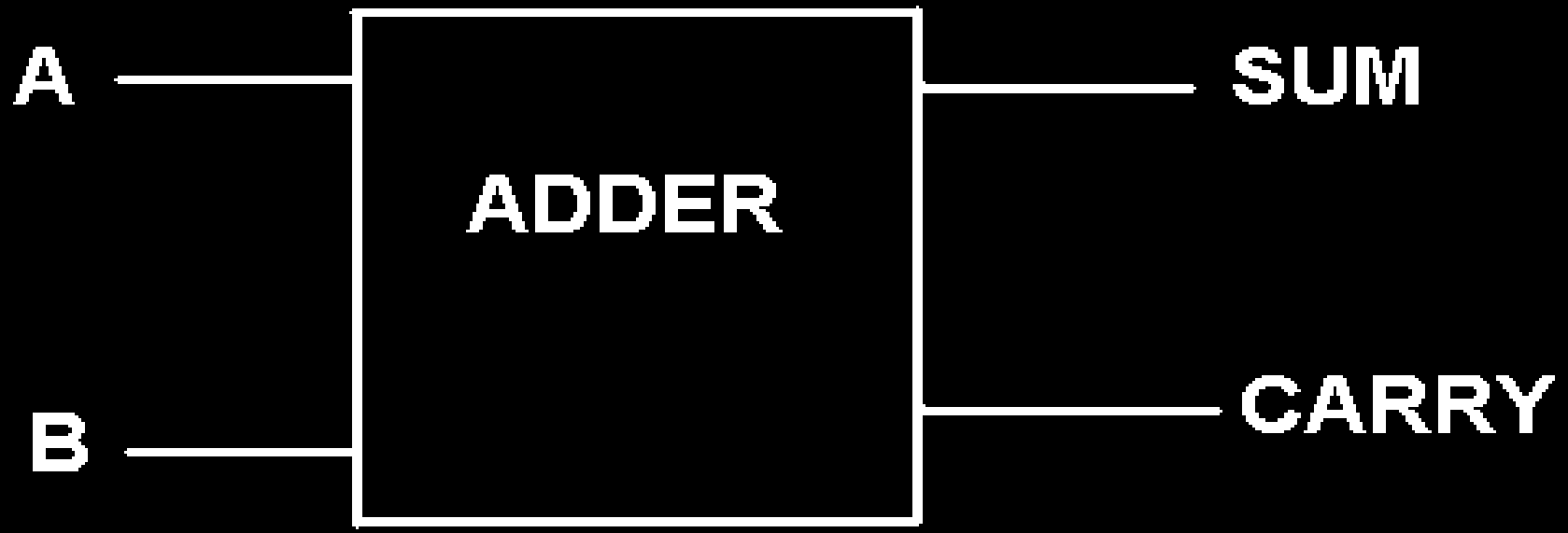
SYNCHRONOUS

4-001-15



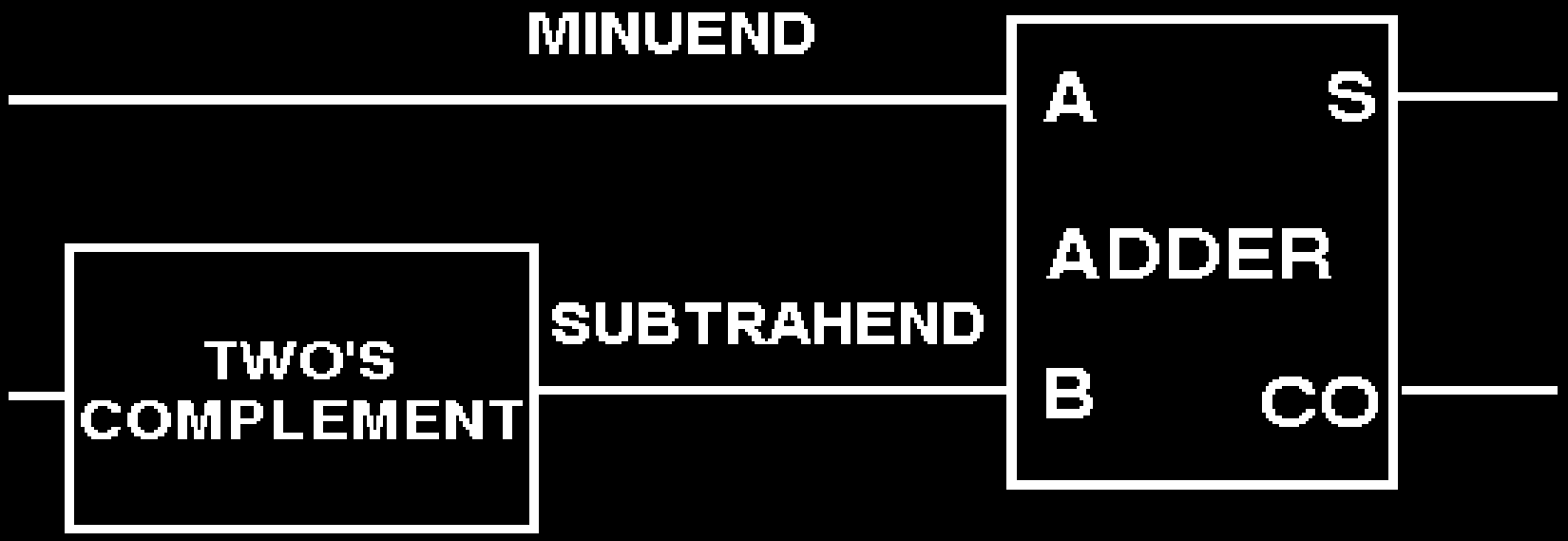
4-001-16

COUNTER OPERATION MODES



ARITHMETIC COUNTING CIRCUIT

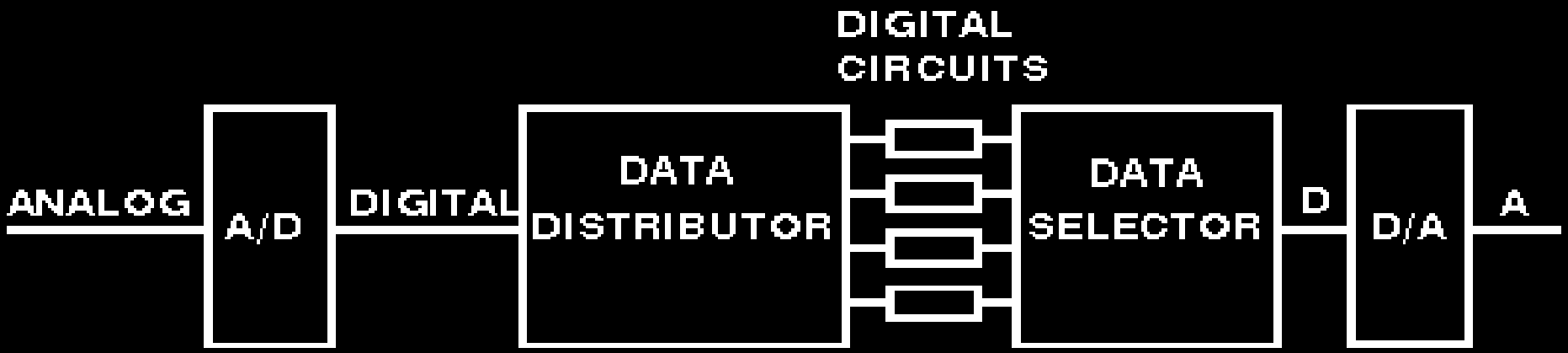
4-001-17



ARITHMETIC COUNTING CIRCUIT

SUBTRACTOR

4-001-18



CONVERSION AND DATA CIRCUITS

4-001-19

DIGITAL TROUBLESHOOTING

ANALYZE THE CIRCUIT to determine what the function is and if the circuit is faulted.

RECHECK THE SET UP to look for obvious solutions to the problem.

MEASURE & TEST CIRCUIT to determine the possible fault or faults.

DOUBLE CHECK RESULTS to verify the possible fault (s).

4-001-21